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'A THING OF BEAUTY IS A JOY FOR EVER.'

What is the *use* of Beauty? Is it intended merely to amuse the fancy for a time, and then pall, fade, and be forgotten? In a system where nothing else is lost, where all is fitness and coherence, and where each part, however minute, seems as necessary to the whole as a single link is to the continuity of a chain, is this quality alone without definite meaning or permanent purpose? Analogy is against the supposition; and we must either set down beauty as an unmeaning superfluity in the scheme of creation, or else assign it an importance commensurate with the space it occupies in our thoughts.

The impressions we receive from external objects are sufficiently well understood in their momentary effects. It is customary, for instance, to say that the beauty of some still and solitary landscape, coming in amidst the conflict of the passions, tranquillises the unquiet bosom, and smooths the wrinkled brow. But if this is correct in the particular application, may we not deduce from it, as a result, that a habitual exposure to similar influences will have a permanent effect upon the mind? We derive pleasure from a beautiful picture; and if seen for the first time, the feeling is exaggerated by surprise and suddenness. At subsequent visits, such adventitious circumstances grow fainter and fainter, and our pleasure becomes more and more calm; till at length—supposing the object constantly present—we view it without any apparent emotion at all. But it is a mistake to suppose that the effects of this form of the beautiful have disappeared with their external phenomena. We feel the picture, without seeing it. We breathe in its invisible presence an atmosphere of beauty, as unconsciously as we inhale the vital air.

Beauty, therefore, is not a mere toy of the fancy, but an important agent in human progress. It is not a luxury, but a necessary. It is not adapted for one class, but for all. It would be untrue to say that beauty is not studied as an art: but hitherto it has been studied from false motives, and in a mean and contracted spirit. Governments and municipalities exercise what architectural taste they may possess, from some vague idea that a combination of the elegant with the useful is necessary to their dignity and character. Rich men lay out their parks and gardens, and fill their houses with agreeable objects, to gratify their own instinctive yearning after the beautiful; and if they extend their care to a cottage or a hamlet, it is merely because these are adjuncts of the physical picture. But no one fancies that beauty is, in reality, a public good—that it should be followed as a moral virtue—that it should be taught and disseminated as a powerful means of making mankind happier and better.

We met, the other day, with an illustration of the influence of natural scenery upon the human mind, which we could hardly have hoped for. It occurs in a little work entitled 'Settlers and Convicts in the Australian Backwoods,' written by a hard-working self-taught mechanic, who was struck with the effect of the localities in which they laboured upon the character of the *convicts*. 'Inanimate nature,' says he, 'is universally lovely in these wildernesses; and a cheerful unprejudiced eye may often observe strange assimilations going forward, in the human character, to the faultless still-life around, which God has retained under his own more immediate control.' There is deep, however unconscious, philosophy in this remark. The beauty of external nature is, in truth, the immediate work of God, intended to act morally upon the mind of man. But the mind must to a certain extent be *prepared* to receive its impressions. Beauty, for instance, has had no more effect in civilising the Australian savage, than in taming the kangaroo; whereas, within the heart of even the worst European convict, there is a hoard of gentle feelings and holy recollections which, buried though they be under the accumulations of vice, and folly, and wo, may be drawn forth by the congenial influences of nature.

This of itself is a sufficient answer to those, if any such there be, who inquire, What is the use of beauty? Such persons, we presume, would measure the utility of a public park by the extent of its area, by the number of cubic feet of fresh air it presents to the lungs of the people—ignorant that the health of the visitors depends in as great measure upon the picture presented to the eye. They would throw open the national galleries, the cathedrals, and the palaces, in order to improve the mind by facilitating the study of styles of art, ignorant that the tendency of such exhibitions is towards a still more important improvement—that a spirit of beauty hovers amid these pictured walls and fretted vaults, with healing on its wing!

All these are large objects—hills and valleys, woods and waters, parks, museums, collections of pictures, and sublime or elegant edifices; and their influence will be obvious in proportion. A walk or ride in a picturesque country, or sail on a river or on the sea, are not merely beneficial to the body, as is commonly supposed, but likewise to the mind. Neither do they act upon the one through the other. The one inhales its aliment or medicine by means of the lungs, or imbibes it by the pores of the skin; while the other depends upon entirely different faculties for those images of peace or joy whose province it is to heal the spirit, by elevating it above bad and anxious thoughts. Similar wholesome images will be induced by a museum of specimens, a collection of pictures, or a concert of music, where there is no fresh air for the nourishment of the body; and the view of a fine cathedral, even when the visitor is a wholly uninformed person, will come in as a more im-

portant moral adjunct than is commonly supposed to the great truths enunciated at other times from its pulpit.

But great objects are not accessible on all occasions. Few of us, in this hard-working country, can very often walk, or ride, or sail, or go anywhere in search of what is called, however erroneously, mere amusement. Beauty, however, is not confined to places or things: it is omniform and ubiquitous. It exists in the plot of ground before the cottage, as well as in the garden or park; in the flower-pot on the sill—in the tuneful cage hung up by the window—in the picture on the wall—in the form of an article of furniture—in the colour and shape of a gown or cap. It is a mistake to blame even the very poorest for the indulgence of taste—or rather it is a mistake not to cultivate taste in them as a means of moral improvement. Extravagance in dress, or anything else, has nothing to do with the question of beauty; and, at anyrate, the extravagance of the poor is usually confined to matters of quite another kind. Preach to them, if you will, of the virtue of economy, the uses of time, the madness of intoxication; but spare the flower—the bird—the picture—the something—the nothing—which serve as bonds between them and the universal spirit of beauty. Touch not with irreverent hand the household gods that consecrate the homes of the poor!

'A thing of beauty is a joy for ever.'

No one can have failed to observe that cleanliness and neatness go hand in hand. A woman who is careless of the form and becomingness of her dress, is always an economist in soap and water, if in nothing else; and a slattern—a despiser of the virtue of beauty—is as bad as a pestilence at the fireside. She cannot be careless of her dress and person, without becoming careless of her husband, children, household, and generally of all her moral duties. In the present day, more especially, there is no excuse for inelegance in dress, nature and simplicity being the rule of fashion. 'We are inclined to think,' says the Quarterly Review on this subject, 'that the female attire of the present day is, upon the whole, in as favourable a state as the most vehement advocates for what is called nature and simplicity could desire. It is a costume in which they can dress quickly, walk nimbly, eat plentifully, stoop easily, loll gracefully, and, in short, perform all the duties of life without let or hindrance. The head is left to its natural size—the skin to its native purity—the waist at its proper region—the heels at their real level. The dress is calculated to bring out the natural beauties of the person, and each of them has, as far as we see, fair play.' Such being the female costume, a peasant may exercise as much taste in regard to it as a peeress; and as for colours, thanks to the perfection of our manufactures, the two parties are pretty nearly equal.

There is nothing that shows more completely the connection between external and internal beauty, than the impressions we receive from the human face and form. Habitual bad temper gives the effect of ugliness to the loveliest features; and habitual good temper renders the plainest agreeable and attractive. And these, be it observed, are the qualities of the features themselves, and do not depend—as is the case with those of an inanimate object, when a change takes place in the impressions we receive from it—upon the mood of mind of the observer. The handsome features are admitted to be correctly chiselled, and the plain features to be irregular, if not grotesque; but the character of both is changed by something we call *expression*. This expression is the spiritual part of beauty. An inanimate object gives us more or less pleasure, according to the state of mind in which we view it; but, strictly speaking, it has in itself only one expression, one form and degree of beauty; while in a human being, in whom spirit dominates over matter, the physical part takes its character almost exclusively from the mind within.

The contempt which some people affect for physical beauty of face and form, is not only irrational, but in a certain degree impious. Such beauty is of a higher kind than that of a star or a flower, on which even the most stolid think it decorous to bestow their admiration; and when sanctified and sublimed by the holy light from within, it is undoubtedly the most admirable of all the works of God. But the pleasure it gives is entirely dependent on the kind and degree of this intermixture of the esoteric and exoteric: a fact which may be placed in a sufficiently obvious light, by supposing a face of absolute perfection in the mould of the features, yet destitute of one ray of intelligence—the face of an idiot. This face excites horror instead of admiration. The deprivation of moral beauty has a similar effect to that of intellectual beauty; and in less extreme cases than those of utter fatuity or depravity, while fully admitting the physical advantages that may be possessed by the features, the pleasure we derive from them is in exact proportion to that more ethereal loveliness perceived by the mind, like all its other ideas, through impressions made upon the senses.

Upon these principles might be explained and reconciled certain varieties in Love, which are usually treated, at least by the grave, as irrational or ridiculous. The love of a child has no reference to form or feature. It selects its object by means of an instinct which penetrates beyond the surface, and finds no difficulty in doting upon age, ugliness, and disease. The youth gradually forsakes the idols of his infancy as he grows up; and the young man, whose natural perceptions are entirely obliterated in the school of the world, attaches himself frantically to mere physical beauty. In the course of years—perhaps not till many years—a change ensues. He finds that he has been worshipping a phantom, grasping at a shadow—that his love was a mere delusion, and his happiness or misery nothing more than a feverish dream. Then comes the triumph of mind over matter. Then do the plainest features become luminous with love in the eyes of the *rusé* man of the world. But judging no more by the unerring instinct of childhood, he is frequently deceived; and on such occasions he feels a pang far more terrible than that with which he had started from the golden visions of youth. But all is at length past—instinct obliterated, the lessons of experience forgotten; and the old man returns, with imbecile energy, to the illusions of early life, to dote once more upon physical beauty.

We have now run through a few of the common forms of the beautiful; but the catalogue is capable of almost infinite extension, and might be crowded with such incongruous images as are heaped together by a modern French poet, in his definition of the kindred word 'charm:'—

'A charm? It is a vision wove
By passion—an enchantment deep—
The first sweet kiss of bashful love—
The smile that lights an infant's sleep:
It is a yellow leaf the wind
Bears wildly from the withered bough—
The calmness of the thoughtful mind—
The paleness of the thoughtful brow—'

And so on through a multitude of things, all distinct

from each other, but all adapted to excite emotions of pleasure or admiration.

But our object is to show the use, permanence, and importance of beauty, as a medicine both for mind and body; and to suggest that, in cultivating the taste, we advance the moral improvement of the people. In this point of view there is philosophical truth, as well as poetical elegance, in the line of Keats, which serves as a title to these desultory remarks—

'A thing of beauty is a joy for ever.'

THE GARDEN OF THE GLACIERS.

Being at Chamouny, and the weather beautifully fine, I determined to lose no time, but to visit the Jardin immediately; for I had heard, from authority I could not doubt, what a gratifying excursion it was. Accordingly, on Monday, July 22, 1844, we left Chamouny, at an early hour in the morning, for the Montanvert, which we reached in such good time, that, after a moderate halt, we were able to set forth again at a quarter past eight o'clock. We were only two in party, but we were attended each by our guide; I by Ferdinand Tissay, who accompanied me to the Buet; and my companion by the celebrated Joseph Coutet. After half an hour's rough walking, we had to pass some precipitous faces of slaty rock, called Les Ponts, where the footing is very narrow, though firm, and where a fall would be attended with certain destruction. These once past, it became our object to launch ourselves on the ice of the Mer de Glace, a matter not always easy of accomplishment—for the glacier, far from presenting a smooth unbroken surface, running up to a regular and gently-sloping shore, is rather to be likened to a tempestuous sea, with gulfs and chasms fixed between it and its inhospitable iron-bound coast; and our search for a smooth point of ingress was precisely analogous to the waiting of seamen for a lull, before launching a boat through the breakers. At last we found a smooth bridge of the unmelted winter's snow, reaching from the side of the rocky glacier-bed to the ice, by means of which we set foot on the Mer de Glace itself, and forthwith commenced the usual and inevitable marchings and countermarchings, to which the countless impediments of the glacier give rise. But before we proceed with the narrative of our day's excursion, it would perhaps be better to give some general account, however brief and slight, for the benefit of those who never have seen or set foot upon one, of what a glacier actually is. It may make the detail of our narrative more intelligible.

First, then, glaciers manifestly can exist only among snow-clad mountains; but snow-clad mountains do not necessarily produce glaciers. Why they do not, is not now the question. However, high mountains in every part of the world are covered with snow; for the fact is, that the atmosphere becomes colder as we ascend; so that, at a certain height called the snow-line, above the earth's surface, snow is always lying. This height is greatest at the equator—namely, 16,000 feet; which, in the Swiss Alps, is diminished to 8700 feet above the sea. In very high latitudes, the natural covering of the earth is snow. But it must be borne in mind that snow always lying on any spot does not lead to the inference that snow never melts there. If the snow never melted, a perpetual progressive accumulation would be the result. The position of the perpetual snow-line is nowhere the line of perpetual congelation. The snow-line is determined solely by this circumstance, that in the course of a year the snow which falls is just melted, and no more. Now, a snow-clad mountain is not a glacier. The common form of a glacier is a river of ice, filling a valley, and pouring down its mass into the valleys yet lower. It is not a frozen ocean, but a frozen torrent; wherefore the appellation of the Mer de Glace is calculated to convey an erroneous notion of the great glacier stream to which it is applied. Its origin or fountain is to be sought for in the ramifications of the higher valleys and gorges, which descend among the mountains perpetually snow-clad. But what gives to a glacier its most peculiar and characteristic feature is, that it does not belong exclusively or necessarily to the snowy region already mentioned. The snow disappears from its surface in summer as regularly as from that of the rocks which sustain its mass. It is the prolongation or outlet of the winter world above. Its gelid mass is protruded into the midst of warm pine-clad slopes and greensward, and sometimes reaches even to the borders of cultivation. The very huts of the peasantry are sometimes invaded by this moving ice; and many persons now living have seen the full ears of corn touching the glacier, or have gathered ripe cherries from the tree with one foot standing on the ice.

The lower end of a glacier is usually very steep and inaccessible. The mean or middle portion is a gently-sloping icy torrent, from half a mile to two miles wide, more or less undulating on its surface, and this surface more or less broken up by crevasses, of a width of from a few inches to many feet, and of a length which sometimes extends from side to side of the glacier. This, its middle portion, too, is covered with blocks of stone, which move along with it, or rather are borne down upon its surface. The motion of the glacier is inferred from the subsistence of the ice in valleys where the daily waste is immense, and where yet the glacier maintains its position; but its progress is also well-marked by the displacement of great blocks of stone upon its surface, which, from their size or figure, cannot be mistaken, and which may be watched from year to year descending the icy stream, whose deliberate movement they mark, as a floating leaf indicates the speed of a current of water! These rocks are detached from the cliffs, and may be seen to fall almost every summer's day, in consequence of the loosening of the icy bands which hold together fragments previously wrenched asunder by the irresistible expansion of freezing water. The stony borders now described are called moraines; which further have the epithets lateral or medial applied to them, according as they are formed by blocks detached at the sides of the glacier, or by blocks detached from the promontory or common point of meeting of the sides of two glacier streams that unite in one; a point manifestly in or about the middle of the new glacier stream resulting from the union.

Persons who have never seen a glacier, may naturally suppose that its middle or lower part is fed or increased by the snows which fall annually on its surface. This is an error; for the snow as regularly disappears and melts from the surface of the glacier, as it does from the surface of the ground in its neighbourhood. Here and there, in shady nooks, we see patches of the last winter's snow, of a dull, dead white, and without an approximation to the character of ice. In whatever way the middle and lower glacier may be maintained, it is most assuredly not by the assimilation into its substance of the fallen snow of winter. The case, however, differs in the higher ice world; and thither our excursion to the Jardin is about to lead us. Of these upper regions it is to be observed, that the snow disappears more and more tardily as we ascend, until we reach a point where it never disappears at all; in a word, until we reach the snow-line upon the glacier.

There are an immense number of additional most interesting phenomena connected with glaciers. But the main points respecting them to be borne in mind are, that they are the outlets of the vast reservoirs of snow

of the higher Alps; that they are icy streams, or rather *bonâ fide* streams of ice, in constant flow, however slow their motion; and that the existing state of human knowledge concerning them, as put forth by the highest known authority on the subject,* amounts to this: that a glacier is an imperfect fluid or viscous body, which is urged down slopes of a certain inclination by the mutual pressure of its parts.

To resume, then, our narrative. As soon as we fairly set foot on the great glacier of the Mer de Glace, we began our course in apparently interminable windings amongst crevasses, blocks of stone, glacier tables, and moraines, of which latter impediments we had to force a passage over three distinct embankments which follow the stream of the great glacier, the Mer de Glace, from the lesser and higher Glacier de L'Echaud. Glacier tables are very singular phenomena. When a large block of stone lies on the surface of the glacier, its area and thickness defends a portion of the surface of the ice from rain and the heat of the sun's rays; in a word, defends the ice immediately under it from causes of thaw, which act on the exposed ice all around; so that, whilst the general neighbouring surface of the glacier in the summer sinks down, the particular spots underneath the greater blocks remain comparatively unchanged; that is, stand up above the general surface, surmounted by the blocks of stone that were in the first instance their protection; in fact, their umbrellas. Hundreds of these tables are to be seen, standing up like enormous mushrooms, all over the glacier. That the glacier should be rent and torn in countless crevasses, is very conceivable, when we consider that it is an imperfect fluid, pressing, slowly yet forcibly, through a rocky mountain-channel of ever-varying width. The phenomena of moraines have been partially explained above. They are so far analogous to the glacier tables, that they are not what they at first sight appear to be—an embankment solely consisting of immovable rocks—but are a bank or ridge of the smoothest ice, strewn with rocks, in a state of nice equilibrium; the bank of ice having originated from the protection afforded it by the mass of rocks from the ordinary causes of thaw. Single small stones, on the other hand, lying on the surface of the glacier, do not protect it from causes of thaw; and besides, becoming heated by the sun's rays, they melt their way into the ice, and disappear in deep holes, like small wells, which they have themselves originated. All we here saw or did in the course of our walk was highly interesting; for we had never before set foot in these regions of eternal ice. At half-past ten we arrived at the foot of the Couvercle, which it is necessary to ascend. The weather was so fine, and the air so clear, that out of pure indulgence we sat down here for twenty minutes to look about us, and thoroughly enjoy the scene. We had now a most sublime view of Mont Blanc, of the Great and Little Jorasses (little by comparison), of the Aiguille du Géant, of the Col du Géant, and of the countless towering Aiguilles of the entire chain of Mont Blanc. Trees we had now left far below us, but verdure not entirely. The scenery was made up of peaks and precipices, eternal ice and snow, diversified here and there with some scanty sheep, or rather, perhaps, chamois pasture.

Next we commenced the ascent of the Couvercle, during which we obtained admirable and astonishing bird's-eye views of the crevasses of the Mer de Glace below us, and of the junction of the Glacier du Taléfre with the Mer de Glace, into which it falls in a style of extraordinary magnificence. The glacier is here brilliantly white; and by the extreme steepness of its descent, it is torn and disrupted into countless fantastic blocks, obelisks, and pyramids of ice, tossed about capriciously, as if by the wild supernatural agency of the spirit of the mountain. From some points of view, though this particular portion of the Glacier du Taléfre can scarcely have a fall of less than 2000 feet (a mere guess, however), one is tempted to compare it to a frozen cataract. But this comparison soon fails to hold good; and the idea that suggests itself is rather that of an enormous mass of crystals, gigantic out of all measure, yet endowed with the regularity and beauty of a specimen in a cabinet of mineralogy. This is in accordance with what I have not seldom had occasion to remark; namely, that when an object of our contemplation vastly exceeds all our ordinary notions of grandeur, there exists a tendency in our minds to compare it with something incalculably less, and even meaner; and that, strange to say, such comparisons are generally far from being inapt. I have heard the epithet *chaotic* applied to this and to other glaciers, but it is surely as unfitting an epithet as can be applied to a natural process in regular action. With this, then, together with other glorious objects alternately in sight and alternately hidden, after a steep ascent, we arrived at a plain of perpetual snow; and after passing, with some difficulty as to footing, over the snow that fills the theatre of precipices whence the Glacier du Taléfre issues, we arrived exactly at seven minutes after twelve at the Jardin, in three hours and fifty-two minutes from the Montanvert.

The height of the lower part of the Jardin above the sea Professor Forbes gives as being 9042 English feet, and that of the highest part as 9893 English feet.

The Jardin (or *Courtil*, as it is called in the patois of the inhabitants of Chamouny) possesses little beauty of its own. It is a mass, or rather a not inconsiderable extent of barren rocks, interspersed with scanty verdure, and adorned with a few wild Alpine flowers. It does not appear, when you first arrive at the spot, that it is indeed insulated in the midst of the icy desert of the glacier, although you may afterwards ascertain that it is so. The outlet in this vast encincture, from whence the glacier issues, has been compared to a volcanic crater with a side blown out. The view all around you is the most rugged, savage, and solitary that can be conceived; and the interior recesses of Mont Blanc, as you look over the great glacier of the Tacul (another glacier stream tributary to the Mer de Glace), are beyond description grand. With the exception of the scanty verdure growing around us, nothing was visible but rocks, ice, and snow. The weather, as I have before noticed, was exquisitely beautiful; and we remained at the Jardin an hour and a half, enjoying the brilliant calm sunshine, which at times was almost too hot, notwithstanding the fresh air from the glacier. Whilst we were eating our luncheon in this wild place, two large crows kept flying round and round, evidently watching us; and as soon as we were on the move, they flew to the spot where we had been sitting, in order to pick up the fragments of our meal.

At the Jardin is a broken bottle full of cards and papers, with the names of persons who have visited the spot written thereon. At about half-past one we began our descent. Soon after we left the Jardin, I managed inadvertently to dislodge a large stone, which, as the words of my journal run, surmounted a bank of ice covered with gravel—in other words, a large stone of a moraine; and in order to avoid grave mischance, I had to make a run for it, on a soft slope of snow, on which walking was not altogether an easy matter. The result, as might have been expected, was a fall; and besides that, I rolled some way down the wet and steep descent. This was a fair specimen of the way in which the most serious accidents may occur; but I saw the danger of coming in contact with the stone, and was prepared for anything rather than encountering the full career of the Sisyphæan burden I had let loose. Coutet and the rest good-humouredly rallied me on my extraordinary activity. At length we came to the foot of the Couvercle, and once more set foot on the Mer de Glace; and made the best of our way to the little auberge on the Montanvert, which we reached at five minutes before four o'clock, having descended from the

* Professor Forbes of Edinburgh.

Jardin in two hours and twenty-five minutes, and having been absent from the Montanvert seven hours and forty minutes. We then returned, all together, to Chamouny.

VULCANISED CAOUTCHOUC.

Several years have elapsed since our last notice of the wonderful material, caoutchouc.* During this period our consumption and the importance of the article have expanded in an equal and surprising ratio; and we should be at a loss at this moment to mention any other substance as taking a more varied and peculiar ratio in utility to man. Its wonderful cohesive force, its property of resisting compression, its impermeability, its elasticity, and its facile accommodation to a host of the wants of mankind, render caoutchouc a substance of great interest at all times. Latterly, however, a new method of treating the material, bestowing upon it a vast increase of its valuable peculiarities, besides endowing it with some new properties, has been discovered. We therefore believe it will interest our readers to offer some account of this new process, which has received the title of 'Vulcanisation, or Conversion.'

Caoutchouc is imported into England in the form of plates and tablets, as well as in the pyriform bottles more familiarly known. Some specimens of the liquid, from which the material is prepared, have also been brought in hermetically-sealed flasks. In this condition it resembles a thick yellow cream; and when applied as a varnish, covers the substance over with an impermeable coating. Since the first introduction of this material to the present hour, it has been an insoluble problem to chemists to restore solidified caoutchouc to its primitive condition: the ordinary solvents of the substance producing a liquid which has few properties in common with the natural fluid, besides that the solution exhales an offensive and pungent odour for a considerable period after its application. Immediately on exposure, the liquid product of the tree separates into two parts, and caoutchouc rises to the surface like the cream of milk. It would, therefore, appear probable that a chemical influence is exerted by the air upon the fluid, since it remains in a great degree unaltered if the access of air is prevented. To render the imported caoutchouc applicable to the purposes of commerce, it requires to undergo a certain amount of preparation. The eminent French chemist, M. Dumas, thus describes this process:—The caoutchouc is taken in the pyriform or tablet condition, and is first pressed between two cylinders, while a current of warm water is permitted to flow over it; in this manner the foreign ingredients and impurities are removed. It is then put into a hollow cylinder, and, by mechanical aid, is subjected to a violent kneading process, during which a large amount of latent heat is evolved; by this means it eventually becomes quite soft, and may be moulded into whatever form is most desirable for the purpose intended. It is then cut by machinery, with the assistance of a constant current of warm water, into sheets; or these may be cut from the masses, as imported, without the preparation described by M. Dumas; or into a delicate elastic thread; or it is cut into shreds for the formation of the solution. At an early period of its introduction into England, caoutchouc was sold to artists at *a guinea* the ounce; it is now procurable, retail, at from three to four shillings the pound. Caoutchouc is soluble in ether, rectified oil of turpentine, naphtha, or oil of coal-tar, and in the bisulphuret of carbon. Of these, the latter, and the offensive liquid naphtha, are the solvents most frequently employed. Messrs Beale and Enderby of London have discovered a new liquid for its solution, obtained by the destructive distillation of caoutchouc itself; an oily fluid is the product, and has the property of readily dissolving the substance from which it is procured. As a certain weight of caoutchouc put into the still yields a weight of the oil nearly equal to itself, there is not much loss in the process.

The applications of unvulcanised caoutchouc have of late years been very numerous. In solution, it has been applied for coating over cordage and cables, to protect them from the destructive influence of salt water. An early application of the same liquid was in the manufacture of the invaluable impermeable cloth; of this a new variety has made its appearance within the last few months. Those valuable little articles known by the foolish name of India-rubber *corks*, are also a production of recent date. They are formed of small stoppers of cotton, coated externally with a thin caoutchouc membrane. They are in some respects vastly superior as stoppers to cork, in others they are inferior to it. In the laboratory, sheet India-rubber is quite indispensable; it supplies the place of a mass of expensive and easily-deranged mechanism of brass-joints and unions: it is easily made into a flexible tube, by taking a narrow ribbon of the membrane, slightly moistening the edges with turpentine, and laying them together over a glass tube; they immediately adhere with surprising tenacity, and in a few minutes the elastic tube is completed. Caoutchouc, in fact, may be said to have contributed in no small degree to the perfection of the experimental chemistry of the day, its economy and utility being equally appreciated in labours which always involve a considerable outlay, and offer, in the generality, few remunerative returns beyond the acquisition of truth. In mechanical surgery caoutchouc is equally serviceable, forming elastic bandages, impermeable plasters, flexible tubes, and the recent elegant substitute for a poultice—a kind of half-sponge, with an India-rubber back to it; besides forming instruments of many kinds of great value but small cost. Among the most important applications of caoutchouc, is its use in the formation of the celebrated marine glue. The caoutchouc is dissolved in oil of tar, or naphtha, and to the solution is added a certain quantity of shell-lac; these are melted together, and by their union, form the almost invincible adherent in question. The masts of ships have been united by it, and then forcibly fractured; and on examination, it has turned out that the fracture has taken place, not at the junction, but in the very fibres of the wood itself. Our readers are probably familiar with the other experiments made at Woolwich upon the strength and tenacity of this material, the most striking of which was, that a ball of wood, sawn in half, and united by the glue, was fired from a cannon, and was found with the union absolutely unshaken in the least. It was even projected that an entire vessel might be constructed by its assistance, without the use of nails and bolts, or at anyrate their use might have been in a considerable degree dispensed with. It may be mentioned here as probable, that in some measure caoutchouc contributes to the elaboration of silk, the mulberry leaves upon which the silk-worm feeds yielding caoutchouc in great abundance. It is possible that it will not be long ere we shall have caoutchouc formed artificially for the purposes of commerce. Dr Ure mentions that linseed-oil, rendered very dry by being boiled with a metallic oxide, and exposed to the air for six or seven months, became very much like caoutchouc, was wonderfully elastic, and possessed other properties resembling that substance.

To return, however, to the more immediate subject of our notice—vulcanised caoutchouc. Mr Brockedon, whose name is well known as connected with the subject of which we are treating, describes the process by which caoutchouc acquires its new properties to be the following, the merit of which is due to Mr Hancock:—The caoutchouc is immersed in a bath of fused sulphur, heated to a proper temperature, until, by absorbing a portion of the sulphur, it assumes a carbonised appearance, and eventually acquires the consistency of horn. The same condition can, however, be produced by either kneading the India-rubber with sulphur, and then ex-

* See No. 433 of our former, and No. 33 of our current, series.

posing it to a temperature of 190 degrees Fahrenheit, or by dissolving it in any of the common solvents, as turpentine, holding sulphur in solution or suspension. A similar process is that of 'conversion,' only in this case the caoutchouc combines with sulphur under a different agency. The bisulphuret of carbon, mixed with sulphur, is in this instance made to act upon the India-rubber, and causes it to undergo a change on the surface; but it cannot be penetrated to any great depth by such means, and the process therefore becomes inapplicable to masses of any density. The *rationale* of these operations appears to be, that the India-rubber forms an actual chemical compound with the sulphur; becomes, in short, a sulphuret of caoutchouc, the properties of which are thus enumerated:—The new compound remains elastic at all temperatures, while ordinary caoutchouc becomes inelastic and rigid at a few degrees above the freezing point of water; vulcanised caoutchouc is not the ordinary solvents, neither is it affected by heat within a considerable range of temperature. Finally, it acquires extraordinary powers of resisting compression, with a great increase of strength and elasticity. Some interesting experiments have been made upon this new compound. Most of our readers are familiar with the construction of the powerful spiral spring in use for the 'buffers' of railway carriages, to moderate the effects of concussion; their ordinary strength is such as to demand a pressure equivalent to three tons and upwards, to compress the spiral close together. Mr Fuller has invented a form of spring, in which vulcanised caoutchouc takes the place of the steel, and the surprising result is, that the India-rubber springs are more than *three times* the strength of the metallic; that is, they will resist, at the height of their tension, a pressure equal to from *five to ten tons*. A more forcible evidence of the strength of this material was obtained by firing a cannon ball through a mass of vulcanised caoutchouc, and it was found literally broken to pieces, while there was scarcely a perceptible rent in the caoutchouc itself.

Gifted with these new powers, vulcanised caoutchouc has already been called into extensive employment for the most various and opposite purposes. It forms, in hydraulic engines of all kinds, one of the most valuable materials for 'washers,' applying itself so accurately to the surfaces between which it is placed, as to prevent the slightest leakage, other things being equal. In this capacity, and from its power of resisting heat, it has also been proposed for the use of steam-pipe joints. It forms an admirable spring, more docile and more equal in power than those of steel: it has been for this purpose applied to locks and window-blinds. It may be here mentioned parenthetically, that by proportioning the ingredients, the material may be rendered harder or softer at will; and that for some purposes it is used in the former, for others in the latter condition. It is manufactured also into the most elaborate ornaments,* being superior to leather in the sharp outline and bold relief of their detail. It is formed into a tubing of great strength and flexibility, well adapted, the consideration of expense excepted, for fire-hose, and for any apparatus required in conveying steam, water, or gas. We have seen this tubing wrapped together, twisted, and knotted into every conceivable shape, and instantly resume its contour as soon as it was liberated from its restraint. This tube promises to become invaluable in the construction of life-boats, superseding those made of canvas, which were slowly destroyed by the influence of sea water. A curious use to which it has been put, is as a substitute for the iron tire or hoop of the carriage-wheel: the advantages it is said to afford are a much lighter draught, and an absence of noise. In dry weather, the first postulate may be granted; but in wet, and upon the greasy streets of the metropolis, the wheels act like suckers on the pavement, and cannot fail to increase the draught of the vehicle; besides, noise itself is a *safe* nuisance, and could not very comfortably to pedestrians be altogether dispensed with. Its most important application is in its use in railways, and, as has been mentioned, in railway carriages. It is laid between the rail and the sleeper, and thus prevents the rails from indicating any traces of pressure. The useful little articles 'elastic bands' are made of this substance. Besides all these applications, it is proposed to apply it as a coating to protect the wires of the submarine telegraph from the influence of the sea water: it forms impervious bottles for ether, inkstands, trouser-straps, gloves, boots, surgical bandages, and a number of other articles, for which its nature almost seems to have been expressly designed.

* We are indebted to the report in the *Athenæum* of Mr Brockedon's paper for many of these particulars.

THE ARMENIAN LEPER.

Towards the close of one of those long bright sultry days which succeed each other with such unvarying sameness during the summer of Asia Minor, a caravan consisting of a string of some thirty or forty camels defiled slowly through the beautiful vale of St Anne. This magnificent valley, at the entrance of which lies the city of Smyrna, in all the pride of her Oriental beauty, is of vast extent, and remarkable for its luxurious vegetation. It stretches many miles into the interior of the country, closed in on all sides by lofty mountains.

The picturesque procession having wound through the last deep ravine, at the steady undeviating pace of the untiring camel, at last emerged into the open country, and came to a halt. It was here that the travellers, who had availed themselves of the protection of the caravan so long as their path was the same with its appointed course, were to separate from their companions, and choose each his track over the wide desolate plain that lay before them. These were chiefly Europeans; and amongst the number were two young Englishmen, who, having heard that somewhere in this direction the remains of a temple had been lately found, had set out in quest of it, although with only an indefinite idea as to the locality of the ruins.

The tinkling of the camel bells was scarcely lost in the distance before the adventurers began to bethink themselves of the admonitions they had received from their companions. The night had fallen so suddenly, that it seemed as though the darkness had been absolutely hurled down upon the earth from the depths of the dark blue sky. No indications of the ruins they sought presented themselves; and what was more, the Smyrniotes had not left them in ignorance that no human habitation existed within a distance of very many miles.

For a time they wandered recklessly on, thinking they would find a couch quite soft enough among the low aromatic shrubs which clothed the desert where they were roaming; but soon the idea of quitting their saddles at all was tacitly given up, notwithstanding the fatigue of their jaded horses; for on all sides, now far off, now so near that they started involuntarily, rose the ominous howling of the beasts of prey, whose numbers render the vicinity of Ephesus so dangerous. They were now greatly at a loss how to proceed, or in what manner to pass the night till the returning day should enable them to shape their course in safety, when suddenly they perceived a faintly-twinkling light gleaming on the plain at a short distance before them.

Greatly surprised at a sight so unexpected in this dreary solitude, they gladly hurried towards it, and soon distinguished in the dim starlight the dark outline of a heap of ruins, where broken arches and prostrate columns lay mingling together. They had no doubt that this was the temple they were in search of; but the light which now appeared to burn steadily in the interior was not so easily accounted for. Advancing to the spot, they dismounted; and having fastened their horses to a pillar, proceeded to explore the ruins, which

were of considerable extent, on foot. Guided by the mysterious ray, which brightened as they approached, they at length reached a large rudely-constructed aperture, through which they could perceive a small lamp placed in a niche of the wall, which strongly illuminated a very singular chamber. The broken pillars, with large stones brought from some other part of the building, had been so disposed as to form a circular wall, whilst the roof had originally been a part of that of the temple itself: a window and a door facing each other had been fashioned with considerable skill; and a couch, composed of the long leaves of the Indian corn, carefully dried, showed that it was the habitation of a human being. Directly facing them, the occupant of this strange apartment himself was seated, intently engaged on some absorbing employment, whilst a large book lay open at his side. He was a man seemingly of some fifty years of age, with a mild and pleasing countenance, which was stamped with a peculiarly calm and peaceful expression. His dress was that worn by the Armenians of the lower orders; and his long beard and flowing hair rendered his appearance strikingly picturesque.

The intruders gazed at him for a few minutes, and then advancing, were about to enter the apartment to crave his hospitality for the night. At the sound of their footsteps, the solitary man suddenly started from the ground, and as soon as his eye fell on the strangers, careless of the customary forms of eastern politeness, he held out his hands as though to ward them off, and exclaimed, 'Stand back! At your peril come no farther!' He spoke in Italian; and the Englishmen, half-smiling at the idea that he probably took them for robbers, answered in the same language, 'You need not fear; we will not injure you.' A smile, in which there was intense melancholy, passed over the lips of the solitary.

'You will not injure me, I well believe,' he answered in a low sad voice; 'but I should harm you.'

'How!' exclaimed the strangers, instinctively grasping their pistols.

'Not willingly,' continued he. 'There is no danger for you, if you do not touch me; and if you require food and shelter, as I imagine you do, most gladly will I now afford you both. It has been my privilege to prepare a resting-place for travellers benighted like yourselves upon the plain, and it is my greatest joy when they avail themselves of it.'

The Englishmen looked at one another; for the manners and language of the solitary were by no means in accordance with the meanness of his dress and appearance. But he gave them no time for reflection: taking the lamp from the wall, he gathered his garments closely round him, and passing them at as great a distance as he could, said, 'Follow me; for at your peril you must not enter here!' They obeyed; and leading them to the door of a room somewhat similar to that he had quitted, he stood aside, and signed to them to enter. It was furnished with several couches of dried leaves, covered with panther skins; and in the centre stood a small table, roughly constructed of uneven wood. When the travellers had completed their survey, they found that their singular host had retired, leaving the lamp on the threshold; but in a few minutes he reappeared, carrying several vases of fresh water, and a large basket filled with grapes and other fruits, just gathered—a circumstance which seemed also somewhat unaccountable in the midst of a desert plain. These he placed at the door, and requested them to lift the provisions themselves on the table. As he stooped, the light of the lamp shone full in his face, and the strangers suddenly started with an involuntary feeling of loathing, as they became aware of the strange and deadly whiteness which characterised it. The solitary perceived and understood the movement; he crossed his arms on his breast (an attitude indicative in the East of entire submission), and said calmly, 'Even so; I am a leper.' The travellers had been long enough in the East to be aware of the virulent nature of this dreadful disease, and of the unfailing certainty of its communication by contagion, though the touch by which it is conveyed were only from the garment of the afflicted person. They now, therefore, understood and appreciated the generous precautions of their unhappy host, and complied with his request to sit down and partake of the repast he had provided, whilst he himself sat on the ground at the door, in order to supply any wants which might occur to them.

Whilst availing themselves gladly of the refreshment they so much required, the travellers continued to look with deep interest on the sufferer, seemingly so patient under such a grievous trial; and but for the dread of reawakening his sorrows, they would have inquired into the details of a history that could not fail to be most striking. He was himself, however, the first to open the subject.

'You now understand,' he said, 'why it is that I live among these solitary ruins, an outcast and an exile, not from my country only, but from all mankind. My disease is the incurable leprosy, for which there is no hope till its power over my mortal body shall be replaced by the corruption of the grave itself. Living, I shall never more know the friendly pressure of a fellow-creature's hand; and dying, my fainting head must not even make its last resting-place on the bosom of a stranger!'

'What a fate!' exclaimed the Englishmen with the accent of pity.

'What a blessed—what a noble fate!' exclaimed the leper enthusiastically, 'if I thereby fulfil the purpose of my creation, as ordained by the All-Wise, whose prerogative alone it is to draw out good from evil! Inglesi, you look surprised to hear the poor forlorn leper speaking thus; but you are young, and your eyes are yet dazzled with the false glitter of this world's perishable joys. If you please, I will tell you the story of my life, and so accomplish a part of the end for which I suffer, if it teach you hereafter, when adversity shall stand upon your threshold, to open wide the door, and welcome to your hearth and home that destroyer of all selfish peace and blind security!' The strangers signified their satisfaction at the proposal; and the leper, drawing as near to them as he could consistently with their safety, began at once to relate his history.

'I am an Armenian by birth, as my dress sufficiently indicates; but you would not guess, from my appearance now, that I was the only child of the richest diamond merchant of Broussa, a fair Asiatic town, whose name, it maybe, you have scarcely ever heard. I was sole heir to all his wealth, and from my earliest infancy I dwelt in his splendid habitation, surrounded by every luxury which a pampered fancy could desire. He died when I was quite a boy, and I remained under the care of an uncle, who, being in fact dependent on me for support, was abundantly careful to gratify my every wish. This injudicious treatment might have been my ruin, had not my own inclination fortunately led me in a course that saved me from falling into idleness and dissipation. You are aware that we are Christians; the foundations of the Armenian church having been laid in the earliest days of an organised Christianity, and continuing with the same forms and ceremonies to the present day. From the first dawn of my reasoning powers it was my ambition to become a priest; not so much, however, from any particular vocation, as from the certainty that by this means alone I could have an opportunity of gratifying my studious propensities and passionate love of reading. Those only of the young Armenian men who are destined for the church receive any kind of education; and such was my intense desire for knowledge, that when, as a candidate for the priesthood, our libraries (which are extremely ancient) were opened to me, I went far beyond the regular routine of study incumbent on me as such, and devoted my whole time to the pursuit of science and learning. Having acquired all the more important languages of the East—the Sanscrit, Hebrew, and

others—I became desirous of gaining also those currently in use in Europe; and for this purpose I made a journey to Italy, for Brousa has little or no connection with the civilised world, and, more than any other town in Asia Minor, has retained its national characteristics and primitive customs. On my return I was admitted to the priesthood; and none could have been less qualified than myself for this high calling, as far as humility and self-denying virtue are requisite for it; but the authoritative power with which it invested me, suited well with my aspiring views; and this, along with my immense wealth and great reputation for learning, soon placed me in such an elevated position amongst my townsmen, as gratified to the uttermost my worldly ambition and inordinate pride. Ah! my friends, mine was then the leprosy of the soul—far worse than that which now afflicts my mortal body! Whilst the motives of my best actions sprung from no pure source, I avoided all outward contamination with the most haughty and fastidious care. Too slothful, and too greedy of man's applause, to practise ascetism and retirement from the world, I mingled freely with those of my fellow-men who would admire my knowledge and laud my seeming sanctity, whilst I turned away from all the sinful and degraded without an attempt to reclaim them. To such a height did I carry my abhorrence of all things unclean, that I neglected, in consequence, one entire portion of my duties as priest; this was the care of the leper hospital, established at some distance from the town as a refuge for the victims of that fatal malady, to which a retributive justice has now consigned myself. It is true, in flying from the very sight of these miserable beings, and scrupulously avoiding all contact with them, I only obeyed the custom of the country, and the still more universal law of self-preservation—that which actuates yourselves even now; but it is a rule of the creed I professed that a man should give his life for the brethren, if need be; and therefore that was in me a crime which in others was not so. But the hour of reckoning with me was at hand. There is a certain festival in the Armenian church, when it is customary that the priest should address the people. This was ever for me a day of exultation and vain display, for then only could I manifest the extent of my knowledge, and startle with the thunders of my eloquence.

'I loved, in my arrogance, to tower over all that kneeling crowd, and show them what I myself must be in the high standard of virtue I presented for their example! The last time I performed this duty of my calling, the subject I chose was that of charity; and I found an ample field for my stern disdain and bold comparisons, in pointing out to them the wide difference between my own high theories respecting this universal law, and the practical system of its performance in Mohammedan countries, where the master of scores of tortured and crouching slaves erects an hospital for cats, or commands that, after his death, a little reservoir for the rain-water shall be hewn out on his tombstone, that the birds may come and drink. I showed them how, virtually, they had all renounced the common brotherhood which binds in one the human race; how, daily, their rude hands tore asunder the fraternal tie between man and man! And when I had concluded, I passed with haughty step through the ranks of my humbled listeners, and went out to a grove of cypress near the town, to indulge in the pleasant reflections which arose abundantly from my gratified vanity. I had wandered on for some time, wrapt in thought, when a deep groan, sounding near me, caused me to turn round, and I perceived an unhappy wretch, evidently in great suffering, vainly endeavouring to crawl to a stream that flowed near him, where he might quench his thirst. At a glance—as quickly as you, Inglesi, perceived the malady in me—I saw that he was a leper, and I could easily account for his forlorn situation in this wood, which was near the hospital I have already mentioned. In Asiatic towns, when it is discovered that a man is afflicted with leprosy, especially if it be that species of the disease which is incurable, he becomes, for all his friends and relatives, as one dead, and even those nearest and dearest to him renounce him as utterly as though he were a perfect stranger. Instantly, lest with an hour's delay the contamination should spread, he is driven forth, not only from house and home, but from all human habitation, and left to find his way, in the first agonies of his complaint, to the only refuge left to him, if he perish not on the road, as many do.

'No sooner did this victim of so terrible a doom distinguish the footstep of a man, than, lifting up his voice, he implored of me, by every sacred name, to find means to give him to drink, for that he was perishing of thirst. But I, heedless of his misery, gathered carefully my robes around me, and fled from his presence with abhorrence. As I did so, suddenly, like a warning voice, I seemed to hear, re-echoed back upon my ear, the words which I myself had spoken but an hour before—the burning words, wherein I showed how charity meant love, and sternly announced that on every human being that law of love was laid, commanding them to cherish one another even to their own detriment! My friends, a man may hear the exhortations of another, and callously continue in his sins; but when by his own words he is judged, when his better self stands forward to condemn him, his conscience must be seared, more even than mine had been with all my pride and folly, to enable him to remain in obstinacy. I had been about to leave a fellow-creature to perish in the worst of agonies. I paused—I turned—I hesitated. Then it occurred to me that I could, without much peril to myself, enable the sufferer to reach the water's edge, by taking off my scarf, several yards in length, and giving him one end to hold, whilst the other, grasped in my hands, would enable me to drag him to the streamlet. How little I merited the blessings the leper invoked upon my head as he saw me turn! How he seized my girdle with the energy of one whose life depended on this aid! till slowly, and by toilsome degrees, I drew him to the river's brink. Alas! the effort had so exhausted him, that when there, he was incapable of standing on his feet to descend the bank and drink. I had again turned to leave him. I imagined I could do no more, though I saw that, with the water almost rippling to his feet, he could not obtain one drop for his parched lips. I moved away, despite of his cries. With one desperate effort he threw himself forward. He grasped my robe! I uttered a cry of horror! He seized my hand! Maddened with terror, I tore myself from his grasp. I flung him from me with a violence which sent him rolling backwards amongst the stones; and I fled, as though I were pursued by demons. For the next week, what a life was mine! For ever haunted by one ghastly fear, which embodied all I ever had most dreaded, this much of good was in me even then, that I avoided the personal contact of my friends and servants, lest, even before the disease declared itself, some contagion should spread: and wo is me! never before had the human voice seemed so sweet to me, or my soul so yearned for human sympathy! My heart seemed to swell, even to bursting, with tenderness for those whose friendly hand I dared not touch; and at last the struggle of my feelings was so violent, that I was seized with a raging fever, and became delirious. Inglesi, from that unconsciousness I awoke in the leper hospital! During my illness, the fatal disease communicated to me (as it could not fail to be) by that one touch of the leper's hand had declared itself, and nothing could save me, loved, respected as I had been, from the common doom of my fellow-sufferers: the curse was upon me which for ever separated me from the sympathy of human beings! This only they did for me, in consideration, perhaps, of the position I had held before—they had me conveyed in safety to the hospital, and did not throw me out on the roadside to perish, as was but too customary; but there they left me, and from that hour I existed no more for all who had known or loved me!

And I awoke to know this, to feel it; to shrink, and shudder, and moan, as I thought that henceforward my sole companionship was to be with those loathsome beings whom I had ever avoided with such deep abhorrence. I was one of them! Freely they gathered round me, and touched me, and placed their terrible deformity, in which I shared, before my very eyes! I could not bear it; I was maddened by the sight. One night I made my escape from the hospital, and fled back towards the town where I had dwelt, so blessed with all that earth could give. I well knew I never could regain my position, or the wealth of which my uncle had taken possession, according to the law; but I had a yearning to look on human faces not disfigured by that dreadful taint, and I rushed wildly onward to the gates, with a faint hope that I might enter unperceived. All fled at my approach, as I had fled when *he* implored me; and when I reached the town, I was driven back with curses. I turned to fly, and they pursued me, trying to stone me to death; but I was fired with all the energy of my despair, and escaped far into the desert, where at least if none were near to comfort, there was no leper's hideous face to torture me! It was night: a cloudless heaven was above me, a changeless wilderness around; and I was alone, struggling in a solitude which should be mine eternally, till I went to seek companions among the mouldering dead! Then the full horror of my sentence caused my brain to reel. I flung myself down upon the desert sands; I raved, I wept, and, in my despair, gave way to the most impious thoughts.

'In this mood I lay till morning dawned, and then I rose to look upon the scene around me—a wide, uninterrupted field of burning sand, where the sunbeams revelled in unbroken splendour. One prominent object only met my eye. Close to me grew a tall and graceful palm-tree, towering up against the deep blue sky. I advanced, and passed my arm round the slender stem, for I seemed to have a sort of companionship with it. Like myself, it was a lonely, solitary thing; and surely its existence in that vast desert must be useless, as my own would be henceforward. But as I looked on it, I was struck with wonder and admiration. In my happier days, I had been too much engrossed with my ambitious occupations and absorbing selfishness to have time to study the marvellous perfection displayed in the minutest works of nature, and now I gazed with almost childish delight on the exquisite beauty of every leaf on those long feathery branches, and the perfect adaptation of each delicate fibre or fold of veined bark to the purpose for which it was intended. The tree was thickly laden with fruit; the ripe dates strewed the ground all around me. I easily gathered a sufficient quantity to allay the hunger which had assailed me; and I then perceived that there grew, beneath the protecting shade of the lonely palm, several low bushes of the pitcher plant, whose bright green leaves do so marvellously take a vase-like form, and catch every drop of rain or dew till they have secreted a cool delightful draught, which has saved the life of many a wayworn traveller in the desert. With this I quenched my thirst, and with all my wants thus satisfied, I sat down at the foot of the friendly palm, and fell into deep meditation.

'This fair tree, alone in the desert, whose existence I compared to my own, had abundantly proved that it was not a thing created in vain, were it but for the relief it had even now afforded to my sufferings; and there was to me something ennobling in the idea, that the germ of the vegetable life might have been placed in the sand, and passed through the various stages of its mysterious growth and fruition, till it came to be this stately palm, with the sole purpose, as ordained by the Creator, of hereafter alleviating the pangs of one of His human creatures. Be this as it might, it was impossible for me not to perceive, as I continued to examine all the perfections of its formation, with eyes opening for the first time to the actual wonders of nature, that the consummate wisdom therein displayed had been exercised for some one fore-determinate purpose, and that this purpose was good. Moreover, that guiding Power which had directed the symmetrical outline of each tiny leaf upon my desert tree, had doubtless in like manner ruled every passing event in the life of reasoning beings. In that case, if all things on earth were tending to the great consummation of the overcoming of evil by good, the individuality even of suffering might well be forgot in the joy of adding our petty efforts to so glorious an end. My past life rose up before me, with its vanity, its utter egotism, its evil, fostered continually in my own breast, and disseminated by my influence on others. Surely thrice welcome the leprosy which had torn me from my stronghold of pride and ambition, and cast me out into the desert, to be alone with—thought! My friends, I will not weary you with all my reflections during the long days when my mind was disciplined in that wilderness, till I learned to comprehend that, by the victory which one individual obtains over the germ of evil in his own bosom, the whole human race is advanced a step. Face to face with Truth, in the immensity of that solitude, I beheld all things in their real light, and became at last what I now am—most happy in trusting submission.

'After a time, I found that my friendly palm-tree was no longer sufficient for my wants; and besides, I was desirous of so regulating my future life, that I might be enabled, so far as my infirmity would permit, to perform my share in the great duty incumbent on every man—the continual endeavour to benefit his kind. I travelled on for many days, seeking a suitable resting-place as near as might be to the haunts of men—of those for whom I desired to live, though for ever cast out from amongst them. I came at length to this spot, and fancied that it seemed, as it were, prepared as a habitation for me; every facility was here afforded me of providing all that was necessary for my daily wants. The soil was good, and would readily admit of cultivation; and if I could establish a certain degree of communication with a village which lies at no great distance, I might thus obtain the seeds and implements which were requisite to make it yield the fruits you now see before you. I required but little; and I looked forward to a life of solitude without dread. The mosque belonging to the village stood, as those places of worship usually do, at a little distance from the habitations of the people; and I repaired thither next morning, keeping at a distance, where it was not possible I could injure any one. At break of day, as I expected, the muezzin appeared to sound the call to prayers; and when he had concluded, whilst he still stood on the minaret's gallery, I drew near, and addressed him without danger to himself. He willingly entered into the arrangement I proposed, and agreed to bring the provisions then necessary, as well as everything else I required, to a certain stone on the plain, where he was to find in exchange a magnificent diamond ring that still remained on the hand none had dared to touch. By this means I was enabled to establish myself, with all the comforts you now see around me, in this my home. Years have gone by since then: my vines yield fruit, my garden flourishes, and I am contented, or rather I am most happy, for I have found it possible, Pariah as I am, to link myself to the beloved human race, by the power of conferring benefits. My daily occupation is to weave the long reeds which grow on the banks of the stream into baskets and mats. These I cast on the bosom of the friendly rivulet, and its gentle waters bear them down to the village through which it flows; from thence they are withdrawn by the peasants, who sell them at the neighbouring town; and more than once, when the fructifying rains have delayed their beneficent dews, the produce of my work has saved them from famine.

'Inglesi, you have listened patiently to this my tale, and now you must lie down to rest. To-morrow you return to the world, and it may be that, when you mingle with its dazzling pleasures, and are allured by its vain hopes, you will appreciate them at their true

value, remembering how an inward conviction in faith and trust could make a solitary leper thrice blest in a desert.'

Whether the Englishmen profited by these admonitions, the record sayeth not. Next morning they departed, to take their part in the stir of life again, but the Armenian leper still dwells alone among the ruins of the temple.

POETS AND FLOWERS.

The former paper on this subject was confined almost exclusively to our older poets: the present selection will be taken from recent and existing writers; and in pursuing our researches, we cannot but be struck by the endless diversity of ideas and reflections to which the brilliant succession of floral tribes conduces. Johnson tells us, in his sententious style, that 'there is something inexpressibly pleasing in the annual renovation of the world, and the new display of the treasures of nature. The cold and darkness of winter, with the naked deformity of every object on which we turn our eyes, make us rejoice at the succeeding season, as well for what we have escaped, as for what we may enjoy; and every budding flower which a warm situation brings early to our view, is considered by us as a messenger to notify the approach of more joyous days.' Cowper says—

> 'That man, immured in cities, still retains
> His inborn inextinguishable thirst
> Of rural scenes, compensating his loss
> By supplemental shifts, the best he may.
> The most unfurnished with the means of life,
> And they that never pass the brick-wall bounds,
> To range the fields, and treat their lungs with air,
> Yet feel the burning instinct; overhead
> Suspend their crazy boxes, planted thick,
> And watered duly. There the pitcher stands,
> A fragment, and the spoutless teapot there;
> Sad witnesses how close-pent man regrets
> The country, with what ardour he contrives
> A peep at nature, when he can no more.'

The poet truly calls the love of nature—of flowers—a 'burning instinct;' for although, in many instances, it is stifled and concealed beneath the husk of gainful pursuits, yet in a thousand others it is a glad and beautiful source of enjoyment. The 'long green box of mignionette,' as described by Tennyson, cheers the lone dweller in many a close and gloomy alley; its odorous companionship recalling the memory of days passed where fields were green and skies were blue. The writer just quoted observes that

> ——— 'the dull
> See no divinity in grass.'

But all are not dull; and the verdant turf refreshes the eyes and soothes the feet of thousands, to whose last resting-places it will one day afford a perennial covering.

One of Tennyson's most beautiful poems, 'The May Queen,' contains a vivid manifestation of the influence of flowers. The dying girl laments—

> 'There's not a flower on all the hills; the frost is on the pane;
> I only wish to live till the snowdrops come again:
> I wish the snow would melt, and the sun come out on high;
> I long to see a flower so before the day I die.'

Although not remarkable for extraordinary beauty, we think highly of the first flowers of the season, and prize them above some of the more gaudy varieties that come after: their early advent is, in fact, the only claim to notice of many that otherwise would be disregarded. Thus Wordsworth tells us of the celandine, that it

> ——— 'comes
> Like a careless prodigal;
> Telling tales about the sun,
> When we've little warmth, or none.'

In another place he observes—

> 'Birds, and butterflies, and flowers,
> Make all one band of paramours.'

And elsewhere, in a beautifully philosophical and poetical spirit, declares—

> 'And 'tis my faith that every flower
> Enjoys the air it breathes.'

According to an old writer, 'the cultivation of flowers is, of all the amusements of mankind, the one to be selected and approved as the most innocent in itself, and most perfectly devoid of injury or annoyance to others. The employment is not only conducive to health and peace of mind, but probably more goodwill has arisen, and friendships been founded, by the intercourse and communication connected with this pursuit, than from any other whatsoever. The pleasures, the ecstacies of the horticulturist, are harmless and pure; a streak, a tint, a shade, becomes his triumph, which, though often obtained by chance, are secured alone by morning care, by evening caution, and the vigilance of days: an employ which, in its various grades, excludes neither the opulent nor the indigent; and, teeming with boundless variety, affords an unceasing excitement to emulation, without contention or ill-will.'

Mrs Barbauld has some pleasing lines to the same effect:—

> 'Flowers, the sole luxury that nature knew,
> In Eden's pure and guiltless garden grew.
> To loftier forms are rougher tasks assigned:
> The sheltering oak resists the stormy wind;
> The tougher yew repels invading foes;
> And the tall pine for future navies grows;
> But this soft family, to cares unknown,
> Were born for pleasure and delight alone.
> Gay without toil, and lovely without art,
> They spring to cheer the sense and glad the heart.'

Flowers have a language, natural and conventional: with the former, they announce the passage of seasons and the flight of hours; the latter is best understood in the sunny East. There the lover selects his floral messengers, and sends to his mistress a graceful compliment, an earnest assurance of constancy, a warning, or a doubt: a thousand emotions may be conveyed by the mute ministers, a thousand similes found in their forms and hues. With what grace Moore gives utterance to Nourmahal's impatient desire for a wreath in 'The Feast of Roses:'—

> 'Anemones and seas of gold,
> And new-blown lilies of the river,
> And those sweet flow'rets, that unfold
> Their buds on Camadeva's quiver;
> The tube-rose, with her silvery light,
> That in the gardens of Malay
> Is called the mistress of the night,
> So like a bride, scented and bright,
> She comes out when the sun's away;
> Amaranths such as crown the maids
> That wander through Zamara's shades;
> And the white moon-flower, as it shows
> On Serendib's high crags to those
> Who near the isle at evening sail,
> Scenting her clove-trees in the gale;
> In short, all flow'rets and all plants,
> From the divine Amrita tree,
> That blesses Heaven's inhabitants
> With fruits of immortality,
> Down to the basil-tuft that waves
> Its fragrant blossom over graves,
> And to the humble rosemary,
> Whose sweets so thanklessly are shed
> To scent the desert and the dead.'

The pedestrian tourist, while wandering over the land in search of the picturesque in landscape scenery, or time-hallowed ruins, well knows the pleasure derived from the sight of flowers clustering round the springs, that, as they run—

> ——— 'preach
> A natural sermon o'er their pebbly beds,'

near a dusty road; fringing the little water-courses on some steep hill-side, or relieving the cool gloom of wooded alleys. The writer of the present article well remembers his first view of Scotland. He had walked through the wildest scenes of Northumberland, and after a halt on the fatal field of Chevy Chase, toiled up

the long ascent of the Carter Fell to the highest summit of the Cheviots. From this point the view is most impressive; hill upon hill stretching away for miles, until lost in the blue and distant mountains, and covered so thickly with heather and gowans, as to resemble broad rolling ocean waves of purple and gold. It was a sight, once seen, never to be forgotten; that left no doubt on the mind with respect to its influence as a source of poetic inspiration. It was no longer difficult to sympathise with Burns's enthusiasm on the subject of heather, or to appreciate the beauty of such lines as those by Mrs Grant:—

'Flower of the wild! whose purple glow
Adorns the dusky mountain side,
Not the gay hues of Iris' bow,
Nor garden's artful varied pride,
With all its wealth of sweets could cheer,
Like thee, the hardy mountaineer.'

And Scott, describing Marmion's prospect from Blackford Hill:—

'On Ochil mountains fell the rays,
And as each heathy top they kissed,
It gleamed a purple amethyst.'

Scott is known to have painted from the life: he did not introduce flowers for mere effect, unless they were to be found in the localities he described. The scene on the shores of Loch Katrine afforded free scope to his pen:—

'Boon nature scattered, free and wild,
Each plant or flower, the mountain's child;
Here eglantine embalmed the air,
Hawthorn and hazel mingled there;
The primrose pale and violet flower,
Found in each cliff a narrow bower;
Foxglove and nightshade, side by side,
Emblems of punishment and pride.'

Dreary, indeed, is the land to which nature has denied flowers: the arid deserts of the torrid zone are not altogether deprived of their presence; and even amid the ice and snow of the polar regions, we find them struggling into existence—asserting, as it were, their right to beautify and adorn, though ever so humbly. The fuchsia and clematis grow in abundance in the forests of New Zealand; with the latter, the native girls braid their hair on festive occasions. The gorgeousness of flowers in tropical climates is scarcely to be imagined by the inhabitants of countries farther from the sun. The rock lily of New South Wales grows to a height of thirty feet, crowned by a profusion of brilliant scarlet flowers. How different this from the

—'fair lily, faint with weeping,
Upon a bed of violets sleeping!'

Or the water lily, as described by Mrs Hemans—

'Oh! beautiful thou art,
Thou sculpture-like and stately river queen,
Crowning the depths as with the light serene
Of a pure heart.
Bright lily of the wave!
Rising in fearless grace with every swell,
Thou seem'st as if a spirit meekly brave
Dwelt in thy cell.'

Shelley also has sung of the lily in musical verse: growing in the garden with the sensitive plant and other flowers was—

—'the naiad-like lily of the vale,
Whom youth makes so fair, and passion so pale,
That the light of its tremulous bells is seen
Through their pavilions of tender green.'

Hood, who in some of his lyrics so much resembles the moral teachings of Herrick, says—

'The lily is all in white, like a saint,
And so is no mate for me;
And the daisy's cheek is tipped with a blush,
She is of such low degree.
Jasmine is sweet, and has many loves,
And the broom's betrothed to the bee;
But I will plight with the dainty rose,
For fairest of all is she.'

And with what a Shakspearean spirit and beauty does he represent the fairies supplicating grim Saturn to spare their lives, urging their attentions to

'The widowed primrose weeping to the moon,
And saffron crocus, in whose chalice bright
A cool libation, hoarded for the noon,
Is kept; and she that purifies the light,
The virgin lily, faithful to her white,
Whereon Eve wept in Eden for her shame;
And the most dainty rose, Aurora's spright,
Our every godchild, by whatever name—
Spare us our lives, for we did nurse the same!'

Of all the poets, Keats appears to be the most imbued with the *floral feeling*: flowers are so exquisitely blended with his subjects, that it seems like sacrilege to disturb their harmonious proportions by the singling out of fragments. 'The poetry of earth,' he tells us, 'is never dead.'

—'I was light-hearted,
And many pleasures to my vision started;
So I straightway began to pluck a posy
Of luxuries bright, milky, soft, and rosy.
A bush of May-flowers with the bees about them;
Ah! sure no tasteful nook could be without them!
And let a lush laburnum oversweep them,
And let long grass grow round their roots, to keep them
Moist, cool, and green; and shade the violets,
That they may bind the moss in leafy nets.'

Lilies have always been considered as emblematic of purity and humility. Ben Jonson says delicately of one of his characters, that she

—'looks as lilies do,
That were this morning blown.'

And a living authoress, Mrs Robert Browning, writes in one of her sonnets, 'a thought lay like a *flower* upon mine heart;' an expression of as much truth as beauty. In another place she introduces to our notice

—'lilies white, prepared to touch
The whitest thought, nor soil it much;'

and elsewhere sets before us the following 'Lesson from the Gorse:'—

'Mountain blossoms, shining blossoms!
Do ye teach us to be glad
When no summer can be had,
Blooming in our inward bosoms?
Ye, whom God preserveth still,
Set as lights upon a hill,
Tokens to the wintry earth, that beauty liveth still!'

Her lament of the flower-spirits on the banishment of Adam and Eve from the garden of Eden, is a most harmonious strain of mournful music:—

'We linger, we linger,
The last of the throng!
Like the tones of a singer
Who loves his own song.
We are spirit-aromas
Of blossom and bloom;
We call your thoughts home, as
Ye breathe our perfume;
To the amaranth's splendour
Afire on the slopes;
To the lily-bells tender,
And gray heliotropes!
* * *
To the rose in the bower-place,
That dripped o'er you sleeping;
To the asphodel flower-place,
Ye walked ankle-deep in!
We pluck at your raiment,
We stroke down your hair,
We faint in our lament,
And pine into air.'

It would be easy to fill a volume with all that poets have written concerning flowers; the harvest is, in fact, so abundant, as to render the task of selection one of some difficulty. Flowers are associated with the loftiest and with the humblest names: for the roses to decorate a single supper, Cleopatra paid L.200. Such was the lavishness with which the Romans indulged their taste for flowers, that sumptuary laws were enacted to restrain it. Verres, when governor of Sicily, made the tour of the island reclining on a couch of roses, shaded by festoons of choicer flowers. The horticultural history of a people would perhaps form an interesting in-

dex to their civil and political history. Herbs and the commoner flowers would be at first in request; but with increase of wealth, and acquisitions of conquest, costly exotics would be cultivated, and nature distorted to suit the freaks of fashion. There is much in the history of the past to make us say with the poet—

'Despise not thou the wildflower! Small it seems,
And of neglected growth, and its light bells
Hang carelessly on every passing gale:
Yet it is finely wrought, and colours there
Might shame the Tyrian purple; and it bears
Marks of a care eternal and divine.
Duly the dews descend to give it food;
The sun revives it drooping, and the showers
Add to its beauty; and the airs of heaven
Are round it for delight.'

MR MILNE ON THE POTATO FAILURE.

Mr Milne is known for his scientific papers, in which we usually find general conclusions arrived at by induction from a great collection of facts. Having turned his attention to the investigation of the Potato Failure of the two last seasons, we are here furnished with a set of observations on the subject, drawn up in the author's usual lucid and painstaking manner.* We learn that the theory of the disease having been produced by *insects* is inadmissible, because it showed itself before there was any appearance of insects. *Fungi* must equally be rejected, for those in the tubers were of different species from those in the leaves: such vegetation appears to have been a result, not the cause, of the disease. The evil could not spring from any over-cultivation of the plant, for specimens brought directly from Peru were affected equally as others. It could not be because the plant has come to the close of its existence as a species, seeing that the disease attacked many other plants, as pease, cabbage, tansy, spinach, and even elms and oaks. Then the weather, the temperature, rains, are all in like manner discarded, because, from a vast amount of evidence collected by Mr Milne, it appears that the disease was irrespective of all such conditions. The weather of 1845 and 1846 appears to have been noway extraordinary, and in the latter year vegetation was everywhere abundant till the time when the potato disease began to show itself.

Mr Milne arrives at the conclusion that the cause was atmospheric, and he deems it probable that the evil lay in some deleterious *substance* diffused through the air at the time of the disease. There are facts, he thinks, even to show to a certain extent the properties of this substance. 'In the first place, it is a substance, the injurious effects of which have been prevented by screens, shelter, and other modes of protection.' In several cases glass frames placed over the plants saved them from the disease, while other plants close by were destroyed. There were several instances of the crops of indolent farmers being saved, while those of careful farmers suffered; and this could be attributed to no other cause than that the potatoes, in the former set of cases, were screened by the weeds which had been suffered to grow over them. In a field which had potatoes sown with barley, 'several of the ungathered tubers had grown in the corn, and not a single plant of these was even in the slightest degree diseased.' Mr Colin Campbell's overseer at Craignish states, that 'potatoes planted on the farm with different manures, and on various soils, were alike tainted. I, however, observed, that when they were sheltered by a stone wall or trees, or when overgrown with weeds, they were not diseased, and have continued sound.' Such experiences are reported from so many other quarters, that Mr Milne regards it as established, that potatoes were saved 'where screened from the external air, or rather from the *blowing on them* of the external air.' 'The effects,' he says, 'seem analogous to what occurs to vegetation near the sea-shore, where it is much exposed. It is of course not the oxygen or nitrogen of the atmosphere which, on the sea-coast, produces an injury to vegetation not produced elsewhere; nor is it the mere cold, because places at a high level inland are exposed to more cold than at the sea level, and yet show none of the peculiar effects on vegetation observable on the sea-shore. There must, therefore, be some particular substance or substances in the sea air to blight the leaves of trees and plants, unless sheltered. These may either be the salts of the sea-water, which are always floating in greater or less abundance upon the winds that come from the sea, and which, being arrested and absorbed by the leaves, may cause their blight and death; or it may arise from the presence of chlorine gas, supposed to be liberated, under certain circumstances, from the chloride of magnesium, which exists in sea-water; and which gas is known by direct experiment to be exceedingly injurious to vegetation. I do not say that chlorine gas, or the saline vapour of sea-water, are the substances which proved injurious to the potato crops; I refer to them merely in illustration of the principle, that when vegetables are injured by the blowing of air, and in circumstances when the mere air would produce, by blowing, no injurious effects, it is probable that there must be some other substance than the ordinary elements of the atmosphere to cause these effects.'

Mr Milne adduces another set of facts, showing that the disease travelled from the south-west to the north-east, taking three months to go from the south of Ireland to the Orkneys. He quotes a correspondent of the *Gardeners' Chronicle*, who tells that his potatoes were affected first on the south-west side of the plants. There is also a curious fact reported by an Aberdeenshire gentleman. Two fields under his observation were affected partially; in the one case, by lines of blight athwart the field; in the other, by the blight of one side, leaving the rest sound; and the direction of the blight in these cases was from south-east to north-west. For some time before, the weather had been very sultry, 'with a light fog or haze travelling very slowly over the surface of the earth, *from the south-east to the north-west*.' Supposing a deleterious substance carried by the wind, it readily occurs, says Mr Milne, that any obstruction, such as trees and other prominent objects, might turn it aside from particular portions of the surface.

Mr Milne then proceeds to remark, that the crops near the Welsh copper-works were comparatively exempt from the disease, the more so the nearer to the works, although the smoke of the furnaces is generally unfavourable to vegetation. There was also less experience of the disease in situations close upon the sea-shore than in inland places. A crop reared on land newly reclaimed from the sea, and out of which no means had been taken to wash the salt, was a luxuriant one. It was also remarked that potatoes manured with soot and guano (substances containing much ammonia) were comparatively sound. 'From these various facts,' says our author, 'I infer that the substance in the atmosphere which injured the potato crops was some acrid gas or vapour, capable of being neutralised or altered in its nature by chlorine, common smoke, and the fumes of arsenious and sulphurous acids.'

The question arises, Were there any unusual appearances in the atmosphere about the time of the potato failure? It appears, according to Mr Milne, that there were. Extensive and very peculiar fogs prevailed, accompanied by much thunder and lightning. A gentleman in Yorkshire reports that about the 25th August there was one night a dense fog, attended by extreme heat, and the next morning the potato fields had precisely the disorganised appearance they have after a night's frost. They soon became black, and the disease followed in a few days. An Orkney farmer

* Observations on the Probable Cause of the Failure of the Potato Crop in the years 1845 and 1846. By David Milne, Esq. Edinburgh: William Blackwood and Sons. 1847.

'observed a very dense fog resting in patches on certain parts of the island; at times it was so defined, that he could point out the exact measure of ground over which it rested. It hung low over the ground, and had the appearance of a light powdering of snow. In passing, it fell down on his small farm, and he *smelt it very unpleasant;* exactly like, he says, the bilge water of a ship, a sulphurous sort of stench. After the wind rose and cleared off those clouds or lumps of fog, there remained on the grass over which they had hung, as well as on the potato shaws, an appearance of gray dew or hoar-frost. The next morning he noticed the leaves of his potatoes slightly spotted. In two days the shaws began to droop and wither, turning pale-yellowish. He now observed that the tubers in the ground, under the diseased plants, were covered by minute white specks, which soon became small maggots; and before ten days, not a shaw was in his potato patch, more than if it had been a bare fallow, while the stench of the rotten potatoes was very bad. This was one of the spots where the fog bank had rested most palpably. But everywhere through the island, the disease, after the fog, began in spots and corners of fields, and spread more slowly over all.'

After quoting other observers of the fogs, Mr Milne remarks that there was something extraordinary in them. 'In the first place, they appeared at an anomalous season of the year—that is, at a period when the temperature of the air generally exceeds that of the earth and water. In the second place, they continued for longer periods than they usually do, even in spring. In the third place, some persons were sensible of a peculiar odour or smell accompanying them.' He adds—'In regard to the connection of these fogs with the potato disease, it certainly does not follow, because two extraordinary things happen simultaneously, or closely in succession, that they are connected. But the probability of their being so, is enhanced by the considerations formerly submitted, as to the existence of *some* extraordinary substance in the air which must have produced the disease; and the presumption is further strengthened by the fact, that in 1845, when there was no failure of potato crops in the Highlands and the Orkneys, there were no fogs; whilst in 1846 there was a universal failure, and simultaneously with the disease, the prevalence of peculiar fogs in the Highlands.'

In the latter part of his pamphlet, Mr Milne shows how small an infusion of deleterious matter in the atmosphere is sufficient to injure vegetation. He also remarks the unusual mortality of both man and beast during the last two years as probably connected with the same cause. While, he says, it is for experienced chemists to ascertain the nature of the substance which seems to have produced the potato failure, he may observe that 'the gases which apparently neutralise it, or counteract its noxious effects, are all those which are remarkable for their antiseptic properties, and some of which are commonly used to stop contagion. Dr Ure observes, that "malaria, or morbific and putrescent miasmata, consist chiefly of hydrogenous matter as their basis, and are best counteracted by *chlorine.*" Liebig, in his "Chemistry and Physics in Relation to Physiology," p. 53, says, that "free or combined ammonia, the almost invariable product of putrefactive processes, is found, during many contagious diseases—as, for instance, typhus—in the surrounding atmosphere;" and we know that ammonia may be decomposed by chlorine (Ure's "Dictionary of Arts"). In like manner it is known that sulphurous and arsenious acids are pre-eminently useful in counteracting putrefaction (Liebig, do. p. 50). It may, therefore, be inferred, that the substance in the air which these several gases neutralised was similar to what, under the convenient name of miasm, is found to be injurious to the vitality of plants and animals. The true nature of miasmata, though guessed at by chemists, has never been ascertained. But it is believed that, like the exhalations from marshes, and the pollen and odoriferous dust from flowers, they are, as Dr Graham says, "highly-organised particles of fixed matter, which find their way into the atmosphere, and remain for a time suspended in it," and when so suspended, they can be dissolved and neutralised by gases of the nature before described.'

Should additional investigation settle the question in this manner, may we not hope to see, among the arrangements of agriculture, apparatus for neutralising such infusions of noxious matter, when they happen to arise?

THE STRANGER OF THE BALL.

A BALL was about to take place in a small country town on the west coast of Scotland, and as the town boasted only one barber of any eminence, it may be supposed that his hands were full. Indeed Duncan could not by any possibility have got through his business, had it not luckily happened that he had just provided himself with an assistant. The assistant was from London; though only from an 'establishment' in a lane leading out of Goswell Street. No matter: he was from London; and the fact was a tower of strength to the concern. The young man was a smart, vain, ignorant, impudent Cockney; and on finding himself all on a sudden in such wonderful demand, he gave himself a thousand ridiculous airs, at which even the anxious and expectant fair ones could not refrain from laughing.

At the period referred to, it must be told—the time when our respected grandmothers were young ladies—a ball could not by any possibility be got up without the assistance of the hairdresser. He was the *primum mobile* of the whole affair. The toes in those days were as nothing compared with the head; and the preparation of the latter for the scene was a task which could only be intrusted to the hands of a professional artist. We might wonder how it was possible for one pair of hands, even when assisted by another pair, to dress the hair of a whole townful of ladies—if we were not aware of the heroic endurance of the fair sex in extraordinary exigencies. The fact is, the labours of the barber began at daybreak on the morning of the day before that of the ball; and those who were obliged to submit to the operation on that day, rather than put in jeopardy, by lying down, the edifice he had constructed of dust, grease, and hair, sat up all night in a chair.

In the town in question, a certain young lady—not *our* grandmother, we beg to say—was on the present occasion one of these victims: but a very unwilling one. On the first intelligence reaching her of the day for the ball being fixed, she had hastened to the spot from a place at some distance where she had been on a visit; but railways, unluckily, not having as yet been invented, she did not arrive till Duncan was engaged, body and soul, for every minute of the actual day, up to the very tuning of the fiddles. Now Miss Bella, though an angel in beauty, was the very opposite in temper. She was proud, arrogant, and imperious; and this unfortunate casualty, though charged in the first instance upon the barber exclusively, seemed at length to be the effect of nothing less than a conspiracy of the whole population. But it was needless to fret or fume. The barber could not, and the other young ladies would not, give way; and at length Miss Bella was constrained to take her place among the penultimates.

This was an unhappy occurrence for the Cockney, who, for his sins, was doomed to dress the spoiled beauty's hair. She was not at any time very condescending to her inferiors in station; but on the present occasion she discharged all the vials of her pride upon the unfortunate young man, till she nearly set him crazy, vanity and all. Her temper, it may be supposed, was not improved by her being obliged to sit up the whole of the night as motionless as a wax doll: but, sustained by the heroism of her sex, she did come through the trial; and as on the next day the hours wore on towards the evening, a wild and feverish gaiety

gradually took the place of her ill-humour. She at length found herself in the ball-room, blazing with beauty, with a pyramid of hair such as Goswell Street had never seen in this world, and her sufferings were entirely forgotten. It was remarked that Miss Bella never looked so handsome, and never moved so gracefully: but some of her own sex discovered a dash of scorn in her gaiety, which detracted, they said, from the effect of her beauty; and others declared that there was something strangely flighty in the movements both of her limbs and eyes. Perhaps all this arose from envy.

But, unluckily, the grand element in the success of a ball was wanting: there was no adequate number of dancing men. The few as yet present were her discarded swains—for she had refused half the bachelors in the town; and these, either in spleen or mortification, kept out of her way. By and by all her own party had been led out; and Miss Bella was exposed to the frequent interrogatories of her affectionate friends—'Why don't you dance?' Still she was not cast down. Her cheeks glowed, her eyes blazed, and she met such impertinent questions with a haughty smile.

'Why don't you dance, Bella? Don't you mean to dance to-night?' said her good-natured companions, gathering round her.

'Yes,' replied Bella, turning to them with a gay fierceness—'I will dance to-night, if my partner should be the——'

How she meant to have finished the sentence, no one can exactly tell: but there was a gleam in her eye while she spoke which frightened her audience, and they drew back with a faint scream. In drawing back, some of them nearly trod on the toes of a gentleman who had just entered the room: at least no one had observed him till that instant. He was a young and handsome man, with the most exuberant curls and whiskers in the world, of a jetty blackness, and contrasting strangely with the waxen colour of his cheek. The eyes of the stranger, for no one in the room knew him, were fixed admiringly upon the beautiful Bella; and walking straight up to her, he asked her to dance. He had not been presented to her; she did not know his name; and yet—with an obliviousness of conventional rule quite foreign to her character—she at once accepted his arm, and in another moment they were whirling together through the dance.

This incident occasioned much conversation. Miss Bella and her partner were decidedly the handsomest couple in the room; and they continued dancing together half the evening. Who was he? From appearances, 'military' seemed most likely; yet not one of the officers of the neighbouring garrison knew him. He was not a resident in the town: it was ascertained that he had not bespoken a bed at either of the inns: he had no horse nor equipage. How did he come? How did he mean to go? The mystery appeared unfathomable; and when at length Bella's uncle made his appearance, at a late hour in the evening, many of the company gathered round him, to tell eagerly how his niece had been dancing so long with an utter stranger, and to advise him at least to ascertain the gentleman's name.

The uncle thought the proud and high-spirited Bella might very well be left to herself in a case of the kind; but still he could hardly avoid taking some notice of the affair. The couple were at this time standing near the door, with several others, to enjoy the cool air; and as they saw the eyes of so many of the company directed towards them, Bella, with perhaps some feeling of awkwardness, as she recollected her imprudence, turned away from her partner.

'Niece,' said the old gentleman, going up to her, 'I shall request the pleasure of being introduced to the gentleman you have danced with.'

'I did not catch his name,' replied Bella; 'the master of the ceremonies will doubtless do what is necessary, unless the gentleman himself—where is he?'

'Where is he?' repeated the uncle.

'Where is he?' echoed the rest of the company. The gentleman had disappeared.

This is a simple statement of the affair as it really happened; but it is hardly necessary to say that a thousand circumstances were added to it by rumour, till at length it was reported and believed that Bella, in despair of a partner, had summoned a certain very old young gentleman to dance with her, who had come at her bidding, and at length vanished in smoke. Even without these adjuncts, however, the thing was mysterious enough; and the proud girl found herself subjected to so many taunts, that she hardly stirred out of her house for some time after the ball.

At length another wonder occurred, to arouse anew the attention of the town. This was the sudden disappearance of the Cockney barber. Duncan, when questioned on the subject, was very close and mysterious; and he was likewise averse to holding frank communication touching the absence, discovered at the same moment, of the plantation of jet-black curls and whiskers of a waxen bust in his shop-window. These were now currently said to bear an astonishing resemblance to the decorations of the stranger of the ball!—and, proceeding from one impertinence to another, Miss Bella was at length complimented with the title of 'The Barber's Bride.' Some old ladies, however, were still disposed to adhere to the supernatural theory; for how otherwise was it possible to account for the change which took place in the haughty beauty? Miss Bella became, from that day, an absolute personification of meekness and gentleness; and acquiring a perfect horror of the vanities of fashion, ever afterwards appeared in a plain crop of curls!

THE INTERIOR OF AUSTRALIA.

The old and new worlds are almost tired of this newer world of the Pacific, where only the sea-coasts, we have been told, are fit for human settlement, while the interior, for a space of at least thirty degrees of longitude, is a series of deserts, watered by lakes that turn periodically into swamps, and rivers that lessen as they run, till they finally sink in the earth, and disappear. Such, at least, has been the experience of Captain Sturt, who, in the midst of unparalleled difficulties, endeavoured, and is still endeavouring, to intersect the vast country from south to north, from Adelaide to the Gulf of Carpentaria. The mighty river, or inland sea, which was the object of his quest, and in the existence of which he entertained a firm belief, receded as he advanced; and when last heard of, he had accomplished two-thirds of his journey, arriving at some degrees beyond the tropic of Capricorn, with still nothing more than Hope in the distance.

But while this is the case in the very middle of the new continent, great discoveries are taking place to the eastward, midway between Captain Sturt's line of route and the distant shores of the South Pacific. There Sir Thomas Mitchell, it appears, has wandered by the banks of noble rivers—one of which he believes to have its estuary in the Gulf of Carpentaria—and in the midst of plains as rich, and hills as picturesque and romantic, as any that are to be found on the most beautiful part of the coast. The world has been too impatient. Australia will yet realise its earlier dreams, and become the site of great empires. Even the central wastes may yield to human industry, as population closes in upon them from all sides of the compass.

But pleasant as such anticipations may be, they are somewhat vague and shadowy. This is truly affirmed to be a practical age; which means that we work much, and speculate little. Progress, progress, is our grand object. Another generation will perhaps ascend the hill-tops, to observe the course of the country through which they are journeying, but it is our genius to push blindly, untiringly on. Let us in the meantime, therefore, follow Sir Thomas Mitchell, without burthening ourselves with the task of posterity.

The letters of the surveyor-general, as given in substance in the 'Launceston Examiner,' are not so precise as could be wished; indeed it is hardly possible to obtain from them any distinct idea of the system of rivers he attempts to describe. After the junction of the Macquarrie with the Darling, he visited the Narran Swamp, 'a wonderful provision of nature for the supply and retention of water in a dry and parched country.' It appears to be fed chiefly by the Narran River, but also by minor branches of the Balonne, which discharges its main waters into the Darling. This division of so important a river as the latter is likewise advantageous, as it serves to irrigate 'from one principal channel extensive regions of rich earth beyond the Darling, while the surplus or overflow, instead of passing, as in common cases, to the sea, is received in the deep channel of the Narran, and thereby conducted to that extensive reservoir, where, on rock or stiff clay, and under ever-verdant polygonum, it furnishes an inexhaustible supply for the support of animal life.'

Proceeding beyond the farthest point marked in the maps, he traced the Balonne flowing in broad, deep, and extensive reaches. 'From Mount Abundance,' he says, 'in longitude 148° 40′ east, latitude 26° 39′ 30″ south, I again perceived that the fine open country in which I then was extended eastward as far as the eye or telescope could reach, and that it was watered by a river from the northward, distinctly marked by the smoke of the natives' fires. That river was still the Balonne, according to the natives; and from Mount Bindango I was able to intersect the summits of the isolated range in the centre of that splendid region, placing it in longitude about 149° 2′ east, and in latitude 26° 23′ 32″ south. To mark the epoch of this discovery, I named it on my map the Fitzroy Downs, and the range in the midst of them I distinguish as the Grafton Range.'

He next came upon the river Maranoa; which was subsequently discovered by Mr Kennedy to join the Balonne. Its banks were of rich pastoral land, of the nature of open downs.

'Continuing my ride north-west, I again found a chain of volcanic summits connected with a mass of table-land, which I named—finding none of the aborigines there—Hope's Table-Land. Mount P. P. King, a pointed volcanic cone, longitude 147° 37′ 40″ east, latitude 25° 9′ 10″, is near the head of that river, which we followed down until it turned, as all the others had done, to the south-west. I reached an extensive grassy valley, which terminated on a reedy lake in a more open country. The lake was supplied by springs, arising in a swamp at the gorge of the valley, which supported a flowing stream of the purest water. The country is adorned by hills of the most romantic form, presenting outlines which surpass in picturesque beauty the fairest creations of the painter. Several pyramids mark the spot where the springs were first discovered, and whence I now write. Lower down appear over the woods isolated rocks, resembling ruined castles, temples, and Gothic cathedrals. Others have apertures through them; and the trees being also very varied and graceful in form, and rich in colour, contribute so much to the beauty of the scenery, that I have been induced to distinguish river and lake by the name of a painter. We lost two days in vainly endeavouring to pass to the westward, through dense brigalow scrub; but on a ride I took north-westward, I was more successful, for after forcing my way through ten miles of scrub, I came to what seemed to me the finest region on earth: plains and downs of rich black mould, on which grew in profusion the *Panicum lævinode* grass, and which were finely interspersed with lines of wood, which grew in the hollows, and marked the courses of streams: columns of smoke showed that the country was too good to be left uninhabited; and, in fact, on approaching the nearest river channel, I found it full of water. This river I named Claude, in honour of the painter of quiet pastoral scenery; and to the downs and plains, so favourable to flocks and herds, I gave the name of the Mantua Downs and Plains. I returned to the party on the Salvator, crossed that river with it in latitude 24° 31′ 47″ south, and conducted it, cutting our way through ten miles of scrub, to the banks of the Claude. These two rivers join at a considerable distance lower down, and form the Negoa; a river which, according to the natives, pursues a north-east course to the sea, and therefore probably has its estuary on the shores of Broad Sound or its vicinity.

'We were obliged to make a bridge for the passage of our carts across the Claude, and then we crossed a plain upon which grass grew almost as thickly as it grew in Australia Felix; then another stream, also full of water, was crossed, and we ascended undulating downs, on which fragments of fossil wood were abundant in a very rich soil. Beyond these—the Mantua Downs—a range of broken summits appeared, and was certainly ornamental, but which we found to be only the upper part of a very intricate and difficult sandstone country, wherein the beds of the gullies were at a much lower level than the downs and plains. I endeavoured to penetrate to the westward of these, but found the country on that side quite impervious. We found a very favourable outlet from that difficult country by a pass, in the gorge of which stood a rock so much resembling a tower, that at first sight few would believe it the work of nature only. The glen we then entered (named from the tower at its entrance, Glen Turret) was very extensive, and contained abundance of good grass.'

All this, however, was of little consequence to the object of the surveyor—the discovery of a great river flowing towards the Gulf of Carpentaria; but in a letter from the Balonne, dated November 9, 1846, we have at length some hint of the consummation so much desired. His first view of what he fondly imagines to be *the* river, was in longitude 146° 42′ 25″ east, latitude 24° 50′ 35″ south.

'On ascending the range early next morning, I saw open downs and plains with a line of river in the midst, the whole extending to the north-north-west as far as the horizon. Following the little stream from the valley in which I had passed the night, I soon reached the open country, and during ten successive days I pursued the course of that river, through the same sort of country, each day as far as my horse could carry me, and in the same direction, again approaching the Tropic of Capricorn. In some parts the river formed splendid reaches, as broad and important as the river Murray; in others, it spread into four or five channels, some of them several miles apart; but the whole country is better watered than any other portion of Australia I have seen, by numerous tributaries arising in the downs. The soil consists of rich clay, and the hollows give birth to water-courses, in the most of which water was abundant. I found at length that I might travel in any direction, and find water at hand, without having to seek the river, except when I wished to ascertain its general course, and observe its character. The grass consists of panicum and several new sorts, one of which springs green from the old stem. The plains were verdant; indeed the luxuriant pasturage surpassed in quality, as it did in extent, anything of the kind I had ever seen. The myall-tree and salt bush (*Acacia pendula* and *salsola*), so essential to a good run, are also there. New birds and new plants marked this out as an essentially different region from any I had previously explored; and although I could not follow the river throughout its long course at that advanced season, I was convinced that its estuary was in the Gulf of Carpentaria; at all events, the country is open and well-watered for a direct route thereto. That the river is the most important of Australia, increasing as it does by successive tributaries, and not a mere product of distant ranges, admits of no dispute; and the downs and plains of Central Australia, through which it flows, seem sufficient to supply the whole world with animal food. I crossed the river at the lowest point I reached,

in a great southern bend, in longitude 144° 34′ east, latitude 24° 14′ south, and from rising ground beyond the left bank, I could trace its downward course far to the northward. I saw no *callitris* (pine of the colonists) in all that country; but a range showing sandstone cliffs appeared to the southward, in longitude about 145° east, latitude 24° 30′ south. The country to the northward of the river is, upon the whole, the best; yet in riding ninety miles due east from where I crossed the southern bend, I found plenty of water and excellent grass.'

The other rivers surveyed—in number, seven—were all of considerable importance; and Sir Thomas believed that an investigation of the mountain-ranges in which they originate would enable him to construct 'such a map of those parts of Australia, as may greatly facilitate the immediate and permanent occupation of the country, and the extension through it of a thoroughfare to the Gulf of Carpentaria, to which the direct way is thus laid open.' He named the great river, 'watering the best portion of the largest island in the world,' the Victoria.

To the Gulf of Carpentaria we must look for the solution of the mystery of Australia. This mighty basin, at the extreme north of the new continent, is the receptacle of so vast a body of water, that the Indian voyagers are said to be able to fill their casks with fresh water when as yet the low land is barely visible from the deck. The head of the gulf consists of an expanse of alluvial soil, covered with luxuriant herbage, and stretching inland to an unascertained extent, which has been appropriately named by Captain Stokes 'Plains of Promise.' 'Whether the rivers, or rather water-courses, discovered here by the Beagle,' says Mr Earl, 'are independent channels, or the embouchures of one large river which carries off the waters of a great extent of country, and which, like the mouths of the Indus, become partially closed during the dry season, is a point of the deepest interest, and which will probably not long remain undetermined.' The same acute observer adds, as a proof of the rapidity with which the land is gaining on the sea, that it has outstripped in its advance even the progress of tropical Australian vegetation, 'the period that has elapsed since its elevation above the level of the waters not having been sufficient to allow the forest-trees to overspread the face of the country.'

Whether the Victoria River, the discovery of which is reported above, will prove to be the grand Australian stream or not, it is as yet impossible to say; but it is at least satisfactory to know that we have advanced so far in the question as to render much longer delay in its solution improbable.

THE CHEAPEST BREAD YET.

We have been favoured by Mr S. Brown, of Finedon, near Higham Ferrers, with a sample of bread, which he states is in constant use on his farm. It is made of flour and mangel wurzel, in equal quantities, by weight. The mangel wurzel is pared, cut into slices, and boiled so as to mash well. The usual quantity of yeast must be used, and little or no water is required. It must stand some time after mixing, and then be baked as other bread. If the loaf sent to us be a fair sample, we should call it good household bread. The saving to families would be very great, the price of mangel wurzel being only a farthing a pound. Fifty per cent. at least would be saved by the use of this bread.—*Newspaper paragraph.*

THE TRUE ELIXIR VITÆ.

Joy is one of the greatest panaceas of life. No joy is more healthful or better calculated to prolong life than that which is to be found in domestic happiness, in the company of cheerful and good men, and in contemplating with delight the beauties of nature. A day spent in the country, under a serene sky, amidst a circle of agreeable friends, is certainly a more positive means of prolonging life than all the vital elixirs in the world. Laughter, that external expression of joy, must not here be omitted. It is the most salutary of all the bodily movements; for it agitates both the body and the soul at the same time; promotes digestion, circulation, and perspiration, and enlivens the vital power in every organ.—*Hufeland.*

BUSINESS AND LEARNING.

If any man maintaineth that learning takes up too much time, which might otherwise be better employed, I answer, that no man can be so straitened and oppressed with business, and an active course of life, but may have many vacant times of leisure, while he expects the returns and tides of business, except he be either of a very dull temper, and no despatch, or ambitious (little to his credit and reputation) to meddle and engage himself in employment of all natures and matters above his reach. It remaineth, therefore, to be inquired, in what matter and how those spaces and times of leisure should be filled up and spent; whether in pleasures or study, sensuality or contemplation; as was well answered by Demosthenes to Æschines, a man given to pleasure, when he told him, by way of reproach, that his orations did smell of the lamp, 'Indeed,' said Demosthenes, 'there is a great difference between the things that you and I do by lamplight.' Wherefore, let no man fear lest learning should expulse business; nay, rather, it will keep and defend the possessions of the mind against idleness and pleasure, which otherwise, at unawares, may enter to the prejudice both of business and learning.—*Bacon.*

PUBLIC CHARITIES.

The general principles by which men are actuated who bequeath fortunes to public charities are *fear* and *vanity* more than benevolence, or the love of doing good, which will appear from the following considerations:—1st, If a man were possessed of real benevolence, and had (as he must then have) a delight in doing good, he would no more defer the enjoyment of this satisfaction to his death-bed, than the ambitious, the luxurious, or the vain, would wait till that period for the gratification of their several passions. 2dly, If the legacy be, as it often is, the first charitable donation of any consequence, it is scarcely possible to arise from benevolence; for he who hath no compassion for the distresses of his neighbours whom he hath seen, how should he have any pity for the wants of posterity. 3dly, If the legacy be, as is likewise very common, to the injury of his family, or to the disappointment of his own friends in want, this is a certain proof that his motive is not benevolence; for he who loves not his own friends and relations, most certainly loves no other person. Lastly, if a man hath lived any time in the world, he must observe such horrid and notorious abuses of all public charity, that he must be convinced (with a very few exceptions) that he will do no manner of good by contributing to them.—*Fielding.*

REVERENCE FOR TRUTH.

The virtue of the ancient Athenians is very remarkable in the case of Euripides. This great tragic poet, though famous for the morality of his plays, had introduced a person who, being reminded of an oath he had taken, replied, *I swore with my mouth, but not with my heart.* The impiety of this sentiment set the audience in an uproar, made Socrates (though an intimate friend of the poet) go out of the theatre with indignation, and gave so great offence, that Euripides was publicly accused, and brought upon his trial, as one who had suggested an evasion of what they thought the most holy and indissoluble bond of human society. So jealous were these virtuous heathens of even the smallest hint that might open a way to perjury. —*Addison.*

CONTROVERSY.

I never loved those salamanders that are never well but when they are in the fire of contention. I will rather suffer a thousand wrongs than offer one: I will suffer a hundred rather than return one; I will suffer many ere I will complain of one, and endeavour to right it by contending. I have ever found, that to strive with my superior, is furious; with my equal, doubtful; with my inferior, sordid and base; with any, full of unquietness.—*Bishop Hall.*

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